

SEMICONDUCTOR DEVICE HAVING CONTACT PLUG AND METHOD FOR MANUFACTURING THE SAME

Abstract of the Disclosure

- 5 A semiconductor device having a contact plug and a method for
manufacturing the same are provided. A diffusion barrier layer is formed on a
semiconductor substrate on which an insulating layer having a contact hole has
been formed. A first metal layer is formed on the diffusion barrier layer filling the
contact hole, and the first metal layer is etched back to a predetermined depth to
10 expose a void in the first metal layer, if any, thereby forming a first sub-plug. A
second metal layer is formed on the semiconductor substrate on which the first sub-
plug has been formed. The second metal layer is polished so as to expose the top
surface of the diffusion barrier layer on the insulating layer. As a result, a second
sub-plug in the contact hole is formed. Therefore, a contact plug comprising the first
15 and second sub-plugs and having strong resistance to particles generated in
chemical and mechanical polishing (CMP) has been formed in the contact hole
without a void or crack.

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